

Applied Science Program Update

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Thomas Jefferson National Accelerator Facility



The R & D Enterprise

The discovery of new scientific knowledge, often embodied as journal publications

The creation of new technology, often embodied as patents

The assembly and integration of technologies to create new products or processes

Manufacturing operations – the effective practice of technologies



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Applied Science Program Role

Partner with industry and others to:

Translate science into technology

Connect technology to applications

Facilitate deployment of technology into manufacturing



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Our FEL-Based Technologies

**Ablation: micromachining, materials synthesis,
pulsed laser deposition**

**Thermal Transformation: glazing, nitriding,
amorphizing, descaling**

**Photochemistry: antimicrobials, grafting,
electrical conductivity**



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FEL PLD Advantages

Molecularly-faithful deposition of organics

Reduced particulates in deposit

Wide materials versatility (TBD)

Potentially very high throughput



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FEL PLD Issues

Experimental program

Versatile user experimental facility (~\$400K)

Major commercial or defense applications

Downstream team members

Next steps: the proposal path



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